

Application No. 10/551,251
Paper Dated: August 9, 2011
In Reply to USPTO Correspondence of April 14, 2011
Attorney Docket No. 4544-052909

REMARKS

Applicant thanks the Examiner for the courtesies extended during the interview with Applicant's representative on July 19, 2011 to discuss the prior art rejections raised in the non-final Office Action. The claims have been amended as suggested by the Examiner to distinguish the claimed invention from the prior art.

Claims 13-22 and 24-31 are pending in this application, and claims 13 and 31 are in independent form. Claims 13 and 31 have been amended. Support for the amendments can be found in Fig. 2 and on page 8, line 22 to page 9, line 7 of the specification. Claims 13-22 and 24-31 will remain pending upon entry of this Amendment. No new matter has been added.

Rejections Under 35 U.S.C. § 103:

Claims 13-22 and 24-31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,289,867 to Barker et al. (hereinafter "Barker") in view of United States Patent No. 6,430,461 to Andorfer et al. (hereinafter "Andorfer") in further view of United States Patent No. 5,770,832 to Carnes et al. (hereinafter "Carnes") and official notice to United States Patent No. 6,866,729 Gramckow et al. (hereinafter "Gramckow"). In view of the above amendments and the following remarks, reconsideration and withdrawal of these rejections are respectfully requested.

As defined by amended independent claim 13, the claimed system includes a segment tracking means for converting the measured data from a time domain to a space domain (emphasis added). The present specification indicates on page 8, line 22 to page 9, line 7 that the segment tracking means converts the measured data from time to space domain by (1) dividing the total length of strip of the metal into a plurality of segments, (2) tracking process history data (i.e., variations in rolling and cooling parameters) for each segment, and (3) storing such data as a segmental file. As suggested by the Examiner during the interview, Applicant has amended the phrase "means for converting..." to clearly indicate that the means for converting relates to the concept of tracking a segment of the strip as it moves through a step of the manufacturing process. The Examiner acknowledged during the interview, none of the cited prior art teaches or suggests this claimed limitation.

As previously explained, segment tracking in the present invention is achieved by dividing a total strip into a number of segments. Each segment is monitored in the system as it moves through the stand and the system is continually tracking measured data for each segment. The tracking is performed based on space domain data (i.e., the position of the segment within a step of the manufacturing process) rather than time domain data (i.e., the position based on elapsed time, without regard to any changes in process parameters). Property prediction based on, for example, a change in rolling speed and/or the timing of header jet openings may be accounted for by tracking each individual segment throughout a manufacturing step. Alternatively stated, segment tracking in space domain can be used for accurate property prediction by taking account of any possible changes within each segment of the strip as it moves through different steps of the rolling process. An illustrative embodiment in the specification describes segment tracking with reference to the cooling step by taking into consideration the rolling speed and header jet openings; however, the segment tracking concept is equally adaptable to other steps in the rolling process.

None of the cited prior art references teaches the above-described concept of segment tracking. As the Examiner acknowledged, the Barker patent only describes performing calculations off-line during simulations on a computer with the results sent to a controller, but only in sequence between rods entering the system. (See the Barker patent, Col 14, lines 67-68.) Therefore, the Barker patent does not teach or suggest the claimed segment tracking means.

The Andorfer patent, which is relied on to teach this limitation, similarly fails to recite the claimed segment tracking means. The Office Action contends that Andorfer teaches in column 3, lines 25-29 that process history data are collected in each of the plurality of segments of the strip; however, the strip in this instance is segmented between individual steps in the manufacturing process rather than segments within each step of the manufacturing process. Additionally, Andorfer calculates the material properties in advance of each step, which necessarily requires previously collected data, rather than data collected during the manufacturing process. As the Examiner acknowledged during the interview, Andorfer provides no teaching or suggestion that the rolling strip can be segmented based on the segment tracking concept as in the present invention, nor does Andorfer discuss segment tracking of the strip in

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connection with the cooling curves described by Andorfer. The Carnes and Gramckow references similarly fail to cure this deficiency.

For the reasons stated hereinabove, Applicant believes that the subject matter of independent claim 13 is not rendered obvious by the cited prior art references. Reconsideration of the rejection of claim 13 is respectfully requested.

Claims 14-22 and 24-30 depend from and add further limitations to amended independent claim 13 (or a subsequent dependent claim) and are believed to be patentable for at least the reasons discussed hereinabove in connection with amended independent claim 13. Reconsideration of the rejection of claims 14-22 and 24-30 is respectfully requested.

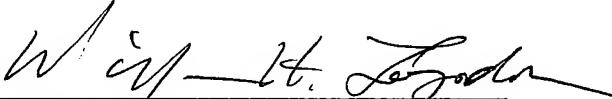
Independent claim 31 has been amended to include an identical limitation regarding the segment tracking means as found in independent claim 13. Accordingly, for the reasons stated hereinabove with regard to claim 13, reconsideration of the rejection of claim 31 is respectfully requested.

CONCLUSION

For the reasons set forth above, Applicant believes claims 13-22 and 24-31, as amended, are patentable over the cited art and are in condition for allowance. Reversal of all of the Examiner's rejections and allowance of the pending claims are respectfully requested.

Respectfully submitted,

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